

- (b) an intelligence system adapted to receive the at least one of the output signals, wherein the intelligence system evaluates at least one output signal to determine the appropriateness of ventilation for the patient;
- (2) receiving into the intelligence system at least one of the output signals;
- (3) implementing the intelligence system to evaluate the at least one output signal to determine the appropriateness of ventilation for the patient; and
- (4) recommending a setting for at least one of the plurality of ventilator setting controls based on the evaluation of the at least one output signal by the intelligence system.

By 40. The method of claim 39, further comprising providing a ventilator adapted to supply a gas to a patient via a breathing circuit in fluid communication with at least one lung of the patient, wherein the ventilator is operatively connected to the intelligence system, and wherein the ventilator includes a plurality of ventilator setting controls, wherein each ventilator setting control controls a parameter relating to the supply of gas from the ventilator to the patient.

41. The method of claim 40, further comprising:

causing the ventilator to generate a ventilator parameter signal indicative of a parameter related to the supply of gas from the ventilator to the patient; and

providing the ventilator parameter signal to the intelligence system, wherein the intelligence system evaluates the at least one output signal and the ventilator parameter signal to determine the appropriateness of ventilation.

42. The method of claim 40, further comprising adjusting at least one of the plurality of ventilator setting controls based on the setting determined in the recommending step.

43. The method of claim 39, wherein said output signals are selected from the group consisting of: an exhaled carbon dioxide signal indicative of the exhaled carbon dioxide (ExCO₂) level of the exhaled gas expired by the patient within the breathing circuit; a flow rate signal indicative of the flow rate (V) of the inhaled/exhaled gas expired by the patient within the breathing

circuit; a pulse oximeter hemoglobin oxygen saturation (SpO₂) signal indicative of the oxygen saturation level of the patient; a pressure (P) signal indicative of the pressure of the breathing gas within the breathing circuit; a blood pressure (BP) signal indicative of the blood pressure of the patient; and a temperature (T) signal indicative of the core body temperature of the patient.

44. The method of claim 43, wherein the output signals also include at least one of the group consisting of: an arterial blood gas PaO₂ signal; an arterial blood gas PaCO₂ signal; and an arterial blood gas pH signal.

B4 45. The method of claim 39, wherein the ventilator parameter signals include at least one of the group consisting of: a minute ventilation (V_E) signal; a ventilator breathing frequency of (f) signal; a tidal volume (V_T) signal; a breathing gas flow rate (V) signal; a pressure limit signal; a work of breathing (WOB) signal; a pressure support ventilation (PSV) signal; a positive end expiratory pressure (PEEP) signal; a continuous positive airway pressure (CPAP) signal; and a fractional inhaled oxygen concentration (FIO₂) signal.

46. The method of claim 39, further comprising displaying the recommended settings of the ventilator setting controls.

47. The method of claim 39, wherein the intelligence system comprises a neural network, and wherein recommending the settings of the ventilator setting controls of the ventilator comprises applying at least a portion of the output signals and the ventilator parameter signals to the neural network of the intelligence system to determine the recommended settings of the ventilator setting controls.

48. The method of claim 39, further comprising:
selecting output signals for display; and
displaying the selected output signals in real time.

49. The method of claim 39, further comprising displaying at least one of the recommended ventilator setting control settings.

50. The method of claim 39, wherein the intelligence system is programmed with a set of decision rules.

51. A monitoring system comprising:

04 a plurality of measuring sensors adapted to monitor a patient, or to monitor a breathing circuit coupled to an airway of a patient, wherein each measuring sensor generates an output signal; and
an intelligence system adapted to receive at least one of the output signals, wherein the intelligence system evaluates at least one output signal to determine the appropriateness of ventilation for the patient.

52. The system of claim 51, further comprising a ventilator operatively coupled to the intelligence system, wherein the ventilator is adapted to supply a gas to a patient via a breathing circuit in fluid communication with at least one lung of the patient, wherein the ventilator includes a plurality of ventilator setting controls, and wherein each ventilator setting control controls a parameter relating to the supply of gas from the ventilator to the patient.

53. The system of claim 52, wherein the ventilator is adapted to generate a ventilator parameter signal indicative of a parameter related to the supply of gas from the ventilator to the patient, and wherein the intelligence system evaluates the at least one output signal and the ventilator parameter signal to determine the appropriateness of ventilation.

54. The system of claim 52, wherein the ventilator is configured and arranged such that at least one of the plurality of ventilator setting controls is adjusted based on a result of the evaluation of the at least one output signal.

55. The system of claim 51, further comprising an output device operatively coupled to the intelligence system, wherein the output device is adapted to present a result of the evaluation of the at least one output signal in a human-perceivable format.

56. The system of claim 51, wherein the plurality of ventilation support parameters is selected from the group consisting of: a flow rate (V) of the exhaled gas inspired/expired by the patient within the breathing circuit; exhaled carbon dioxide (Ex CO₂) level of the exhaled gas expired by the patient within the breathing circuit; hemoglobin oxygen saturation (SPO₂) level of the patient; pressure (P) of the breathing gas within the breathing circuit; blood pressure (BP) of the patient; and core body temperature (T) of the patient.

57. The system of claim 56, wherein the plurality of ventilation support parameters also includes at least one of the group consisting of: an arterial blood gas PaO₂ level of the patient; an arterial blood gas PaCO₂ level of the patient; and an arterial blood gas pH level of the patient.

58. The system of claim 51, wherein the ventilator setting parameter signal comprises at least one of the group consisting of: a minute ventilation (V_E) signal; a ventilator breathing frequency of (f) signal; a tidal volume (V_T) signal; a breathing gas flow rate (V) signal; a pressure limit signal; a work of breathing (WOB) signal; a pressure support ventilation (PSV) signal; a positive end expiratory pressure (PEEP) signal; a continuous positive airway pressure (CPAP) signal; and a fractional inhaled oxygen concentration (FIO₂) signal.

59. The system of claim 51, further comprising an alarm for notifying an operator that the setting of at least one of the ventilator setting controls differs from the recommended settings.

60. The system of claim 51, wherein:
the intelligence system comprises at least one neural network.

61. The system of claim 51, wherein the system is programmed with a set of decision rules.

62. The system of claim 60, wherein the system has means for training the neural network.

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